DOCUMENT RESUME

ED 291 614 SO 017 936

AUTHOR Vasu, Michael L.; Garson, G. David
TITLE PoliNet and Information Utilities: Using Telecommunications in Political Science and Public Administration Education and Research.
PUB DATE 31 Aug 86
NOTE 21p.; Paper presented at the Annual Meeting of the American Political Science Association (82nd, Washington, DC, August 28-31, 1986).
PUB TYPE Speeches/Conference Papers (150) -- Guides - Non-Classroom Use (055)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Computer Networks; *Computer Uses in Education; Databases; *Information Networks; Information Services; Online Systems; *Online Vendors; *Political Science; *Public Administration; Research Tools; *Telecommunications
IDENTIFIERS *PoliNet

ABSTRACT

General information utilities and specialized networks, such as PoliNet, provide educators and researchers in public administration and allied fields with a diversity of new tools which include: (1) bibliographic searching; (2) international teleconferencing; (3) electronic news clipping services; (4) electronic mail; and (5) free public domain microcomputer software. Electronic publishing, access to online databases, file distribution libraries, and computer based education may affect public administration courses more profoundly than any other 20th century development. The power of utilities and networks results in: (1) increased research possibilities; (2) communication economies; and (3) educational convenience. This document describes the uses of information utilities and networks for teaching and research, the technological dimensions of computer networks, and the organization of PoliNet, the first customized information service designed for public administrators and political scientists. The specific steps in accessing PoliNet's various programs are explained. Users may select: (1) an event's schedule; (2) newsletters; (3) electronic mail; (4) forums; (5) a conferencing system; (6) user profiles; (7) vendor information; (8) public domain fields; (9) gateways to HumaNet and Delphi databases; (10) Dialog and AP News; (11) financial services; (12) the Kussmaul Encyclopedia; (13) travel services; and (14) data storage space. Twenty-nine endnotes are provided. (JHP)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED291614

POLINET AND INFORMATION UTILITIES:
USING TELECOMMUNICATIONS IN POLITICAL SCIENCE
AND PUBLIC ADMINISTRATION EDUCATION AND RESEARCH

BY

Michael L. Vasu & G. David Garson

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Michael L. Vasu

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

SO017936

BEST COPY AVAILABLE

PoliNet and Information Utilities: Using Telecommunications in Political Science and Public Administration Education and Research

by

Michael L. Vasu
North Carolina State University

Michael L. Vasu, Associate Professor of Political Science and Public Administration and Director of the Social Science Research and Instructional Computing Lab at North Carolina State University, Raleigh, N.C. 27695-8101, (919) 737-2481

and

G. David Garson
North Carolina State University

G. David Garson, Associate Dean for Computers and Budgeting, School of Humanities and Social Sciences, North Carolina State University at Raleigh, N.C. 27695-8181, (919) 737-2467

Presented at

American Political Science Assocation

82nd Annual Meeting, Washington Hilton,

Washington, DC

August 28-31, 1986

Introduction

Marshall McLuhan's most enduring metaphor, the "global village", is today becoming a reality at least in some respects. Through electronic information utilities, scholars from around the world may be involved participating in computer conferences held by their special interest groups, reading mail transmitted electronically, transferring manuscripts, perusing online journals, or simply chatting with a friend. Access to these global computer communication networks is commonly provided by information utilities such as Delphi, The Source, or CompuServe.

It is the purpose of this paper to discuss the use of information utilities as resources for enhancing the teaching and research function in public administration. The concept of information utilities will be presented in a generic sense, focusing on PoliNet, the first customized information service designed for use by public administrators and political scientists. In order to discuss the potential uses in research and teaching we will begin with an overview of telecommunications processes.[1]

Information Utilities and the "Network Nation"

Computer networks are based on the capacity of computers to talk (communicate) with each other via telephone connections.[2] Lap-top computers no larger than this paper can communicate with the nation's largest mainframe through ordinary telephone lines. In effect, then, computer networks reflect the integration of two dominant technologies, the telephone and the computer. The combined effect of this merger is to enable a computer network to employ the enormous information processing capability of the computer with a virtually unlimited geographical distribution of the telephone.[3] This merger has already produced profound implications for the manner in which society deals with information and management.[4]

Information networks are the new utilities of our "information age".[5] The "information utility" phrase was coined by The Source, the computer network owned by Reader's Digest in conjunction with Control Data Corporation.[6] Information utilities provide users with both information and communication via phone lines and a host computer system. For a subscription fee and basic hourly user charge, a member has access to databases of statistics or text from an ever expanding variety of information vendors such as DIALOG, BRS, SDC/ORBIT. These database vendors themselves provide access to a variety of specific databases such as Public Affairs Information Service, Sociological Abstracts, Legal Resource Index, Government

Publications, and Cendata (the census). These database vendors can be accessed via information utilities in most cases.[7]

Information utilities bundle and sell communication services that usually include electronic mail, bulletin boards and forums, teleconferencing (real-time keyboard to keyboard communication), and online newsletters.[8] Electronic mail enables almost instantaneous point-to-point communication not only within the given network but also through gateways to existing message systems such as the 1.8 million Telex and TWX machines in the world.[9] Moreover, computer networks provide mechanisms (protocols) that allow one user to take a file produced on an individual's word processor and "upload" it to the network host computer for eventual "downloading" by a colleague in a different city or nation.[10] Bulletin boards or forums enable users to post a variety of announcements, questions, and responses.[11] Teleconferencing allows a group of users to confer online in real time via their microcomputers. These conferences can be conducted under specific rules of order, either public or private, and the proceedings of the conference can be saved and printed to disk for future reference.[12]

Computerized conferencing is not new to public administration, having been developed by Professor Murray Turoff for the Office of Emergency Preparedness. The Emergency Conferencing System, System and Reference Index, was employed in administering the wage/price freeze imposed by the government in 1971.[13] Currently all major information utilities offer a conferencing capability.[14] The communication and information processing services of information utilities are made possible by a series of technologies that have profound implications for political science research and education.

Using Information Utilities in Teaching and Research

Information utilities can be a useful tool in both teaching and research, with as many creative applications as there are creative minds within a discipline. The key word here is discipline. For better or worse, most research is still conducted within the social network of discipline-specific boundaries such as "public administration", "sociology", or "history". Likewise most teaching is organized by discipline. This is one reason that, we believe, the most appropriate way to employ the technological capacity of an information utility is to select one (such as PoliNet) which centers on users in a given discipline.

In outlining the potential uses of information utilities, it is useful to discuss a series of scenarios - both teaching and research - which illustrate the capabilities of telecommunications. All represent current telecommunication

capabilities and many represent actual faculty experience.[15]

Teaching Scenarios

(1) An instructor in the area of public policy is looking for an inexpensive piece of software in the area of cost benefit analysis. She logs on to PoliNet and posts a forum message under the PoliForum area. Her message is added using the ADD command and it simply states in paragraph format her desire for assistance in this area. A colleague responds via the electronic mail (E-Mail) function and suggests that she go to the File Distribution Center of PoliNet and check both the Teaching and Instruction area and the Computer Applications and Software area. Under Teaching and Instruction she finds a series of syllabi that have been placed online by the Policy Analysis Teaching Group. She "downloads" the three syllabi that reference commercial software and its application in their courses and then sends E-Mail to the PoliNet members that have provided these syllabi to PoliNet asking for elaboration of certain details. She goes to the Computer Applications and Software section and notices that a variety of free software (public domain) - along with its documentation is available online. She "downloads" this free software-both program code and documentation to diskette using her communication program, SMARTCOM II. Since there are no restrictions, she makes twenty copies of the software for use in her class the following week. In the meantime, the three faculty she has contacted have decided to have a "real-time" conference focused on the problems associated with teaching Policy Analysis. They decide to have their conference on the first Monday of the month at 10:00 pm EST. They post a PoliForum message announcing the conference and inviting interested individuals to join.

(2) An instructor in the area of Latin American studies is teaching a course during a period of turmoil in a major Latin American country. An instructor eager to provide his course with the most up to date assessment logs onto CompuServe and goes to the online Associated Press Headlines. Using a menu which appeared after typing in "GO APV", he selects from a variety menu divided into national, international, and world news. He notes an article of interest just placed on line by Associated Press (AP). He downloads the article to diskette and prints out twenty-five (25) copies. He takes these copies to class and uses them as an introduction to his topic area for the day.

(3) An instructor teaching a course in organizational theory has just recently covered the literature on small group dynamics. In particular, the discussion of status and sex on participation. In an endeavor to illustrate the topic she seeks to show the effect of communication flow in a computerized conferencing situation. She employ's PoliNet's conference center and arranges an online conference between her class in North Carolina and one in Great Britain. The instructors agree to choose as the topic

of the conference "Is Management a Universal Science, or Do Cultural Factors Make a Difference?" and work out an agenda for discussion beforehand, including a discussion paper available for students to download to their own word processors for making annotations for the later conference. Students may also prepare statements for instant uploading at the outset of the conference, or for a pre-conference forum.

Research Scenarios

(1) A scholar interested in the impact of Woodrow Wilson on public administration logs onto the Public Affairs Information Service, Management Contents, and other bibliographic databases available through DIALOG, which in turn can be accessed through PoliNet. Other services might also be consulted, such as Harvard Business Review/Online. Bibliographic citations found are automatically entered into a database maintained by the ProCite (formerly the Professional Bibliographic System), from which they may be retrieved as needed for the scholar's essays, using the automatic footnoting features of his or her word processor.

(2) A scholar interested in public reactions to problems of nuclear power plant regulation uses the Vu/Text online newspaper databases for two dozen newspapers around the country to build up a database of pertinent news clippings (or the researcher subscribes to an online clipping service for a desired period of time). After the database is built, the researcher uses various text analysis tools such as FYI 3000 to content analyze the clippings to establish regional differences in reported regulatory issues.

(3) A scholar who has worked on public budgeting is interested in how other faculty he or she has worked with in the past think about some contemporary issue, such as the impact of the Gramm-Rudman-Hollings legislation as perceived by experts in various states. Arranging an online conference through electronic mail, scholars in this research group meet in a teleconference on PoliNet and discuss issues under the guidance of a preselected moderator. Later the moderator uses his or her word processor to edit the proceedings of the conference, which has been automatically transcribed at no cost, and E-mails the edited summary to participants for their comments and changes. The final version is printed in the group's online newsletter, is made available in the PoliNet file distribution area, or is published in a conventional printed journal.

Research and teaching applications of networking are almost limitless. On the research side there is access to census or other data, to bibliographic searching, to joint collaboration on manuscripts, to international conferencing, to electronic versions of Delphi forecasting or surveys, not to mention

electronic publishing and consulting. On the teaching side, telecommunication networks introduce students to the world of computing, give them access to the same resources as researchers, allow communication with students in other parts of the nation or world (this alone could revolutionize the teaching of comparative administration, for example), and allow improved exchange of teaching resources such as syllabi, to name a few of the possibilities.

The Technological Dimensions of Computer Networks

Although the term "network" is applied to local area networks (LANs), such as those linking Apple or IBM microcomputers at a given institution [16], in this essay we are focusing on national and international networks. Such networks rely on host mainframe computers which can be reached by long distance telephone calls. In practice, however, users save expense by accessing networks by dialing local telephone numbers provided by value-added networks (VANs).[17] Examples of value added networks are TYMNET, MCI, or UNINET. These services employ existing telephone lines, as well as specialized hardware and software, to send multiple users' messages in compressed form over long-distance lines, saving expenses for all users even after the VAN's surcharge is added.

Value added networks actually consist of a variety of nodes in many cities. Each node uses a hardware/software combination called a PAD to separate data into packets of fixed length and transmit them to their ultimate destination. In most American cities a user can communicate with an information utility by calling a **local** number and connecting to a node in a VAN system. The message or signal sent by the individual microcomputer is converted to digital form, various codes are added to identify the origin and destination of the message, and the data are sent as a line of text (packets of data). These so called "packet switched networks" then transmit their message to the host computer of some established information utility, which then transmits it to its final destination.

The basic components required to gain access to any information utility are as follows:

1) A microcomputer equipped with communications hardware, or a terminal. Communications hardware for a micro usually consists of one of the following configurations:

   (a) An internal or external modem which accepts a modular phone jack

   OR

   (b) A communications card which resides in a slot in the micro, an external modem which accepts a modular

phone jack, and a cable which connects the card and the modem

2) Communications software (a communications package - i.e., Hayes SMARTCOM II, PC-TALK, CROSSTALK, ASCII EXPRESS, etc.)

3) A subscription to the information utility which will provide you with a username and password

4) A standard phone line

At this point we will employ the example of PoliNet to describe a typical session on a telecommunications network. PoliNet is a non-profit, university-owned, international customized computer network managed by political scientists and public administrators and designed to focus on the area of public administration, criminal justice, political science and city planning. PoliNet is a customized professional network under Delphi, one of the nation's three major information utilities. Like all information utilities, PoliNet provides its members access to communications and information facilities described earlier in this essay.[18]

Assume a user on PoliNet wants to send electronic mail to another user. Typically, User 1 types a message at his/her keyboard. This message is sent via a modem through the phone line using a value added carrier TYMNET to Delphi's central computer system in Cambridge, MA. where it is sent instantaneously again via telephone lines to TYMNET and then the receiving microcomputer.[19] At the receiving end the modem re-translates the message. The message can then be displayed on the screen by User 2 and, of course, may be printed out.

A few of the components that are a part of a typical computer communication system require elaboration. A modem is basically a contraction of the terms modulator-demodulator. The function of a modulator is to convert the digital signals into analog signals and a demodulator reconverts the signals for the receiving computer. What a modem does, in effect, is to convert the eight bit parallel communication process of the computer to a format that can be transmitted over the **two** information-carrying wires of the phone system. Since phones and phone technology preceded computer technology, the modem serves the function of transforming signals that computers understand to signals that can be conveyed over the standard telephone lines. Conceptually, "intelligent" modems are actually limited function computers with a self-contained microprocessor dedicated to signal transfers across existing telephone lines, as well as other data communication capabilities like uploading and downloading data.

Modems can be internal, cards designed to be placed into slots on the the computer, or, external, devices that are outside of the micro and which communicate with the micro through a communications card and a cable. Modems may be acoustically coupled or directly connected, although a direct connection provides more reliable data transmission. An acoustic coupler is configured in such a way that the telephone is placed in specially designed cups on the modem. Modems can transfer information at variable speeds, among the most common transmission rates are 300 bps (bits per second) or the more common 1200 bps (1200 bits per second). In terms of characters appearing on the screen this breaks down to 30 characters per second (CPS) at 300 bps and 120 characters per second at 1200 bps. Information can be transferred at higher baud rates, such as 9600 baud, but transfer rates above 2400 baud are presently not typical.[20]

Modems also are designed from a hardware point of view so that they can provide the user various features. Some of those features are autodial, the ability of your computer to automatically dial another computer, and autoanswer, the ability of your computer to answer. Finally, depending upon the type of modem you choose, you may need a special type of cable, an RS-232C connector which ensures compatibility of signal data transfer.[21]

The hardware components interact with the communications software that drive them to allow a user to communicate with any computer network. Communication software is designed to allow your microcomputer to emulate a "dumb terminal". This feature is a legacy of the fact that data communications software and protocols evolved during the era of time sharing, when public and private organizations purchased time on a host computer and accessed that computer via a remote terminal. However, in addition to placing your microcomputer in terminal emulation mode, your communications software also provides you with the capacity to manipulate a variety of communication parameters (duplex, parity, asynchronous vs. synchronous communication, handshaking, etc.).

Fortunately, increasingly sophisticated communications software has established a series of default options for these variables which are generally consistent with the requirements of the information utilities. If a change in these parameters is required it is essentially a matter of finding the terminal configuration diagram of the network with which you seek to communicate and changing an appropriate menu item to adjust that parameter.

In addition to control over the technical parameters of data communication your software also provides significant control over the information and communication features of any computer

network. For example, quality communication packages allow you to toggle back and forth between an "online" session and your communication package menu. This feature allows you to control printer functions - (turning it on and off) in order to capture information such as a portion of an online newsletter that you want to print onto a diskette, or paper, for future reference. Moreover, a communication program is essential in the process of file transfer--since your communications program will contain an option specifically designed to export a file.[22]

The ability to send and receive files over an information utility is one of its most important features. What this means is that individuals in different regions of the country (or in different countries), can "upload" a file that reflects a research paper, syllabus, and/or instructional aids. The information utility then makes the paper available to another user who can "download" that paper. The communication package employed will determine the ease with which that can be accomplished.

The most common file transfer protocols for text or data are ASCII (American Standard Code for Information Interchange), XMODEM, and KERMIT. ASCII has been characterized as the "universal currency" of file transfer.[23] The ASCII code is a common denominator in an otherwise unstandardized computer world. The ASCII code assigns a number to the letters (upper and lower case) of the alphabet and every number from 0 to 9 plus special characters such as punctuation marks (127 total). These ASCII codes are then converted to binary format (0's and 1's) which is, in essence, what ASCII files are made of. Most communication packages support ASCII file transfer[24]; however, it is frequently desirable to send files that contain control characters, i.e., the boldface option in a word processor. In order to achieve this one must have communications software (and an information utility) that supports machine language file transfer. Machine language files have evolved to mean any file (text or data) that contains codes not found in a straight ASCII file.[25] For example, except when in non-document mode, WordStar will insert its own special high ASCII codes, those extended beyond 127. One reason for these high codes is that they serve as the basis of a compression code scheme designed to conserve disk space. As a practical matter, if you want to transfer readable files to another colleague over an information utility and you are not satisfied with the ASCII format--(i.e., you want the document to look like it does when output by your word processor: boldface, underline, etc.) you will need to employ a special protocol like XMODEM or KERMIT[26]. These protocols allow error-free transmission of machine language files. Consequently, if one seeks to use the abilities of an information utility to send and receive wordprocessing files that retain their control codes one will want to be sure that the communication software that they choose supports a protocol such as XMODEM or KERMIT.[27]

The Organization of The PoliNet Information Utility

As noted earlier, all information utilities provide their users with access to both information and communication. These features can be illustrated by looking at the features present on PoliNet's Main Menu. The manner in which PoliNet is accessed is typical to the process of accessing other information utilities. A new user installs the modem, follows the directions for installing their communications software (i.e., SMARTCOM II), defines a new set of parameters (PoliNet) using the given default parameters and adds the phone number for local access of Tymnet or Uninet to that set. After saving the PoliNet parameters on disk, he/she then follows the following steps:

(1) **Dials** a local TYMNET number

(2) When "PLEASE TYPE YOUR TERMINAL IDENTIFIER" (300 baud rate) or a "SERIES OF RANDOM CHARACTERS (1200 baud) appears, he/she types the letter **A.**

(3) When "PLEASE LOGON" appears the person types in **DELPHI**

(4) When "USERNAME" appears, the user types in the **username** he/she has been given when they joined PoliNet, i.e. VASU, M.L.

(5) When "PASSWORD" appears the user types in their **PASSWORD**, i.e. NCSTATE

At this point the PoliNet system will sign on and the user may employ the systems facilities. The first thing to appear after the opening banner will be the Main Menu.[28]

This Main Menu serves as a focal point for describing the features of the network. Users need simply to choose a desired menu option based upon what task is preferred at the moment. In effect, one way to conceptualize PoliNet is to envision a series of nested menus each branching out from the main menu. These menus correspond to function which the systems can perform for you (electronic mail, conferencing, file transfer). These functions are basically communication or information in nature.

PoliNet Opening Menu

Welcome, Social Scientists!

Events Schedule	**Services**
PoliNews	**HumaNet**
Mail	**Dialog ($)**
Newsletters	**AP News ($)**
Forums	**Finanical Services**
Conference Center	**Kussmaul Encyclopedia**
Polls	**Travel Services**
User Profile	**Delphi**
Online Markets	**Workspace**
File Distribution Center	**EXIT**

The Main Menu contains functions for sophisticated electronic mail, newsletter and journal distribution, real-time conferencing, topical forums, search and retrieval of user profiles, online polling, distribution of public access files, premium-access databases, and customized services provided over the network. There is an exit to the companion network HumaNet, to the range of bibliographic retrieval service Dialog, and to the public information utility Delphi.

To receive further information online about any Main Menu command, the user simply types "HELP". Each of these functions will be overviewed below.

PoliNet Main Menu Selections

Events Schedule. As the name implies, this area in the network provides a forum for the scheduling of events by type, date and location of conferences, meetings and discussions.

The **PoliNews** area on the Main Menu is a special type of newsletter designed to disseminate appropriate information about the network. Recent changes, possibilities being considered, new public domain files available, appropriate people to contact for something, etc., can be found here.

MAIL. A sophisticated electronic mail facility is available on the network. As an example, the sub-menu is displayed below. This sub-menu is a list of additional communication options available to the users of the system.

Mail Menu:

SOURCE/COMPUSERVE Mailthru	SCAN for New Messages
CATALOG of Mail Files	TELEX (Outgoing)
GLOBALINK Translation	Workspace
MAIL (Electronic)	HELP
	EXIT to Main Menu

MAIL > (Please Select an Item) Mail <user-entered>

The first-level mail menu appears above and requires the user to select one of the several "mail" options. Briefly, these include: sending mail to users of the **SOURCE** or **COMPUSERVE** information utilities; listing a catalog of the user's mail files; **GLOBALINK** which is a service that allows your text to be translated into another language first (Globalink Translation). Globalink can provide translations into Spanish, French, German, Italian and Portuguese from English and vice-versa. Service into and from most other major languages is available; however, advanced notification is required. Scan provides for scanning for mail arriving since the last time the user was on the network; sending mail through the **TELEX** system; entering the user's personal **WORKSPACE**; requesting online **"HELP"** on a given command; and exiting to the Main Menu.[29]

Newsletters. The area on **PoliNet** devoted to newsletters and journals is an innovative approach to rapid and dynamic dissemination of social science information. This area allows a user to check the table of contents of each newsletter to scan the first two lines of text in each article, to read an article, and to forward a copy of an article to his/her personal WORKSPACE. (There are, however, copyright considerations for redistribution of such material).

Forums. There are certain general topics in Political Science and Public Administration around which there might be many sub-topics of communication. It would be very useful to organize a cluster of related sub-topics into a "forum" on that general topic so that users could readily communicate about it On **PoliNet**, there are a number of **"PoliForums"** which combine several network functions within what might be thought of as a particular "neighborhood" (i.e., a given **PoliForum**) within a much larger metropolitan area of activity (i.e., **PoliNet**). There are several **PoliForums** presently online, organized into separate "topics", with each topic representing a different forum.

A **Forum** consists of a consecutive series of user-entered "memos", subsets of which comprise "threads" (or conversations) concerning the topic of the particular forum. Users may initiate a new thread, reply to a message and read, file a copy of a message just read to one's workspace, forward a copy of a message to another user (i.e., send an electronic "photocopy" of a

message), or access electronic mail. Since these forum areas vary by topic, the menu structure is not presented here. However, an example of a **PoliForum** might be Central America or Democracy and Terrorism.

Conference Center. Real-time conferencing (i.e., "keyboard to keyboard") is available on PoliNet. It is not as complicated as some other specialized conferencing-only systems (e.g., PARTICIPATE, EIES) but does have many advanced features that make it very "friendly" to users not familiar with complex conferencing formats. This feature is very useful for two or more social scientists who are collaborating on some research, or other type of project, to have online meetings about the work sections itself. Formal group meetings, such as official interest sections, can also be held online without the effort and expense of face-to-face meetings. There is a facility for sending all communications to a central (online) file for later distribution or offline archiving, thus freeing anyone from the conventional task of taking "minutes" of meetings. Conferences can be either "public" (open to anyone online who wishes to join), "password-access only" (open only to those users online who know the password), or "private" (accessible by invitation of the conference chairperson), allowing flexibility and protection as called for by the nature and content of the meeting.

Polls. There is the ability of taking polls directly from online users. Making use of dichotomous (yes/no; agree/disagree) and multicategorical (Likert; nominal categories; plus user-defined "other" categories) formats, users may suggest polls which may be implemented by the host at the Social Science Research and Instructional Computing Lab (**SSRICL**) at North Carolina State University (NCSU). We plan to use this feature to help shape the future development of the network and it will allow for the rapid collection of data on a particular topic of importance to the discipline in a very inexpensive fashion.

User Profile. One of the clear benefits of an electronic "community" is the ability to find other social scientists who have certain characteristics and interests. Part of the User Profile is completed online as part of the membership application process but other user-characteristics are entered as part of the "I-Am" feature of User Profiles. Users may enter any type of keyword and entry for the keyword (e.g., APSA Section membership) to describe themselves. Others may "find" them by invoking the Search or Browse features of User Profile. Additionally, if one user would like to find out more about another Username that is seen online (such as in the Conference Center or in the **PoliForum** areas), then the "Who-Is" command would display a selected profile provided by the "unknown" user.

Online Markets. Social scientists routinely make use of many commercial services and information. As a way of

efficiently linking vendors of these products to social science consumers, this area functions much like a large database. In it there will be "vendors" of premium services, products, and information that can be searched, accessed, ordered directly online, and so forth. The National Collegiate Software Clearinghouse, for example, will allow direct purchase of its low-cost ($30 or less) social science software with online billing capability. We plan to develop this area carefully, making certain that the vendors allowed online are in the best interests of social scientists.

File Distribution Center. The ability to distribute public-domain or other contributed machine-readable files on a mass scale is another useful feature of **PoliNet**. The File Distribution Center is an area that facilitates this cooperative sharing. Users may send a contributed file to the network center using **PoliMail**. Then, with appropriate screening, this file can be listed under the directory of the File Distribution Center as being available to users. Interested users could then download the file to their microcomputer or copy it to their own online WORKSPACE for storage. Bibliographies; SPSSX, SAS, or BMDP command sets; small to medium-sized datasets; preliminary convention program schedules; and other types of machine-readable material are but a few examples. We are implementing the public domain KERMIT file-transfer protocol on **PoliNet** which will, among other things, allow users to almost instantaneously "ship" portable files in SPSSX or SPSSX/PC to others. This facility would complement the current implementation of the ASCII and XMODEM file-transfer protocols on the network.

Services. This database-oriented area is under development as of this writing. Given the tight job market for social scientists, especially involving the non-academic sector, one possible database would be employment notices that could be posted the same day that they are received! This would require an important collaboration with organizations that seek such employees and could become a labor-intensive effort. The compilation of social science consultants with their specialties listed online is another possibility. Developing some mode of access allowing clients seeking such consultants would benefit both parties and social science in general by facilitating the spread of social science expertise. There are several other ideas under consideration for **PoliNet** Services and we will be developing them over the next year.

Gateways to HumaNet. Because all three are on the same set of computers, there is a toll-free gateway to our companion professional network, **HumaNet**, and the commercial public information utility, **Delphi**.

Dialog. We are fortunate to have direct access to the largest bibliographic retrieval service, **Dialog**, as part of **PoliNet**. Although access is a premium service and requires users to also acquire an account with **Dialog**, the convenience of direct access is well worth the added expense in labor savings. Long the sole domain of reference librarians, online bibliographic retrieval has been made very accessible to the average social scientist by many new software products like In-Search and Sci-Mate (see Newlin, 1985 for a discussion of social science uses).

AP News. This is a news module providing AP Videotext news and covers international, national government, businesss, Wall Street, stock lists, entertainment and sports. Accu-weather provides city, national, and international business news, government economic figures, reports of trading of major exchanges and complete stock listings from the New York Stock Exchange and the American Stock Exchange. Other features include Today in History, Comedy by Wire, and Movie Reviews.

Financial Services. This provides **PoliNet** users with a complete set of finanical tools. On line security and commodity pricing, online buying and selling of (this requires the user to open an account with the participating brokerage firm).

Kussmaul Encyclopedia. This is a part of the regular fee structure of **PoliNet**. It is a large reference "electronic encyclopedia". It represents a general reference work containing information on more than 20,000 topics. It is activated by simple commands such as "look up" and "cross reference".

Travel Services. Travel services are providing the PoliNet communicty with interactive office services and include airline scheduling, seat availability and reservations (through OAG, an extra cost service). It also contains city profiles and information in lodging, car rentals and travel tips.

Delphi. **Delphi** is the mother network of **PoliNet** and this is the section in which members are provided a free gateway.

Workspace. This is the **PoliNet** members personal workspace. It is the area in the system where members can store files containing information that they have themselves produced or that they have acquired from other users or sources. This is the section of the system from which a user uploads files to Polinet, downloads files from PoliNet, and does a variety of functions: edits, submits, etc.

EXIT. Exit from the system.

Summary

General information utilities and specialized networks such as PoliNet provide educators and researchers in public administration and allied fields with a rich diversity of new possibilities ranging from powerful bibliographic searching to international teleconferencing to electronic news clipping services to electronic mail to free microcomputer software. Electronic publishing, access to online databases, computerized bulletin boards on discipline-related subjects, file distribution libraries of manuscripts, and computer-based instruction are just a few of the endless possibilities which could have as profound an impact on public administration education and research as any single development of this century.

Yet if studies of innovation diffusion show anything it is that there is a great gulf between the realm of possibility and the practicalities of implementation. Information utilities face a serious "chicken and egg" problem: until they are used by many in the profession, they are useful only to a relatively dedicated few who are willing to pioneer the new technology involved. It is difficult to exaggerate the inertia of the American professorate with regard to technological change and the insecurities and costs it poses.

In spite of difficulties, however, the impact of electronic networks on public administration education and research can only grow in the future. Ultimately the power of its research possibilities, the economy of its communications possibilities, and the convenience of its educational features will bring more and more scholars into direct contact with information utilities of the type described in this essay. The "global village" may remain an illusive ideal type but the public administration research and education community of the future will surely be a closer and more dynamic one as a result of the growth of information networks in the next decade.

Endnotes

1. Roxanne Hiltz and Murray Turoff, **The Network Nation: Human Communication via Computer**, (Reading, Mass:Addison Wesley, 1978). This book is an excellent overview of computer networking.

2. Alfred Glossbrenner, **The Complete Handbook of Personal Computer Communications**, (New York, N.Y.:St. Martins Press):3.

3. Hiltz and Turoff, **The Network Nation**, chapter one. Also, see: Harlan Clevland, **The Knowledge Executive: Leadership in an Information Society**, (New York:E.P. Dutton, 1985).

4.Clevland, **The Knowledge Executive**.

5. The term information utility was designed to express a relationship with other existing public utilities. Indeed, the idea that information is the type of "public good" that falls into the regulatory context of the traditional utilities has a variety of interesting policy implications.

6. Glossbrenner, **The Complete Handbook of Personal Computer Communications**:7-9.

7. Glossbrenner, **The Complete Handbook of Personal Computer Communications**: 7-12. Also see Larry E. Jordan and Bruce Churchill, **Communications and Networking for the IBM PC**, (Bowie, Mo:Robert J. Brady Company, 1984).

8. The three major information utilities and their addresses are: Delphi, General Videotex Corporation, 3 Blackstone Street, Cambridge, MA 02139 (800-544-4005). The Source, 1616 Anderson Road, McLean, VA 22102 (703-734-7500). CompuServe, 5000 Arlington Centre Boulevard, P.O. Box 20212, Columbus, OH 43220 (800-848-8199). PoliNet is a customized professional network on the Delphi System.

9. Michael L. Vasu, Ellen Storey Vasu and Sarah H. Noell, **PoliNet User's Guide**, (Raleigh, NC. PoliNet, 1985):38. PoliNet is similar to most information utilities in that it provides "standard" and "premium" services. Telex is a premium service for which the user pays costs over and above the hourly service charge.

10. Alfred Glossbrenner, "The Fine Ares of Data Transfer", **Popular Computing**, (September, 1985):69-73.

11. The bulletin board or forum on PoliNet is called the PoliForum. This area of the network is designed to provide the membership with an interactive messaging system, a conceptual bulletin board. Many of the commands, under the forum are

designed to allow the user to follow the "thread" of a specific topic, e.g., American Policy in Central America.

12. The conference under PoliNet allows two or more users to communicate in "real time" or "keyboard-to-keyboard". The entire conference can be "captured" and logged to the users WORKSPACE for eventual printing. This facility is useful for small, informal groups as well as larger format groups. (e.g., an ASPA or an APSA section). See, **PoliNet User's Guide**.

13. Glossbrenner, **The Complete Handbook of Personal Computer Communications**:366-368.

14. Glossbrenner, **The Complete Handbook of Personal Computer Communications**: chapter 15.

15. Rich Slatta, "Telecomputing Services, Teaching and Research", Collegiate Microcomputer, III (February 1985):23-28.

16. David Ushijlima, "Inside Apple Talk", **Byte**, (June 1985):185-200.

17. Carl Townsend, **Electronic Mail and Beyond: A User's Handbook of Personal Computer Communications**, (Belmont, MA, Wadsworth Publishing Co., 1984).

18. Vasu, et. al., **PoliNet User's Guide**.

19. J. Mark Brown, "Tutorial, Text File Transfer Operations-Apple to IBM", **Social Science Microcomputer Review**, 3:81(Spring 1985):46. Also, see: Kirkwood M. Callahan, "Social Science Research in the Information Age: Online Databases for Social Scientists", **Social Science Microcomputer Review**, 3:1(Spring 1985):28-34.

20. Glossbrenner, **The Complete Handbook of Personal Computer Communications**: 51. Also see Paul Kreager, **Practical Aspects of Data Communications** (New York's McGraw Hill, 1983). Of course, we are referring to data communications over conventional and not dedicated phone lines.

21. The Smartmodem is a board modem that installs directly into one of the slots of the computer. The Smartmodem 1200B plugs directly into any full length system expansion slot in the computer and is completely self contained, eliminating the need for a separate serial communications interface card. It has its own software package SMARTCOM II.

22. SMARTCOM II will allow you to transfer both ASCII and binary files.

23. For a good source of definitions of computer related terminology see: Kent Porter, **The New American Computer Dictionary**, (New York, Signet Books, 1985). See Ellen S. Vasu, "Creating and Uploading Files and Downloading Files and Output: A Tutorial on Using the IBM PC to Communicate with TUCC", Social Science Research and Instructional Computing Lab: 7100-1, North Carolina State University at Raleigh, 1985.

24. Glossbrenner, "The Fine Art of Data Transfer". Also see Ellen S. Vasu, Sarah H. Noell, and Michael L. Vasu, "Using Hayes Smartcom II Communications Software on the IBM", **ScholarNews**, Vol. 1, No. 1, April, 1986 (Raleigh, NC).

25. Vasu, et. al., **The PoliNet User's Guide**:41-44.

26. Vasu, et. al., **The PoliNet User's Guide**:61. Also see, Ellen Storey Vasu, Sarah H. Noell, Michael L. Vasu, "Uploading and Downloading Files on ScholarNet: A Tutorial", **Social Science Microcomputer Review**, Fall 1986, Vol. 4, Number 3.

27. The XMODEM and KERMIT protocols allow for "error-free" transmission of data files. Moreover, these protocols are increasingly becoming available on major information utilities. A user and a host communicate, however, both must have the protocol to effect the "error-free" file transfer.

28. PoliNet information is available by calling (800) 544-4005.

29. Vasu, et., al., **PoliNet User's Guide**:23. Also see Frank M. Howell, Michael L. Vasu and Ellen S. Vasu, "Telecommunications Systems and Evaluation Research: Using SocNet and PoliNet as Examples", Microcomputers and Evaluation Research, a special issue of Evaluation Review, Oct., 1986.